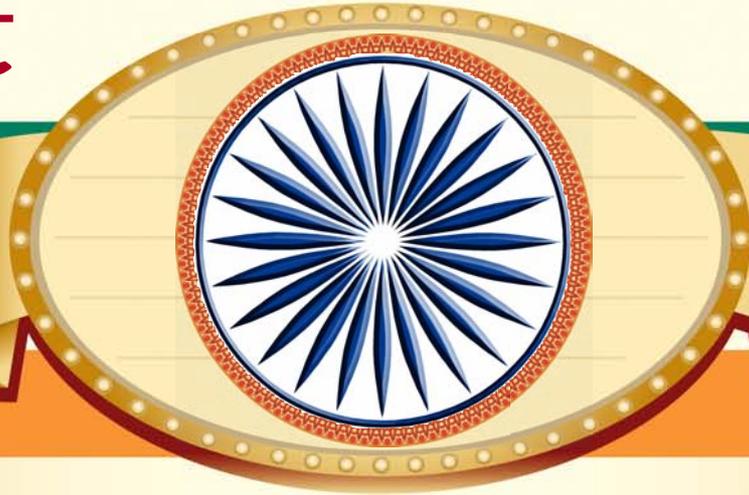


इंटरनेट

मानक



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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

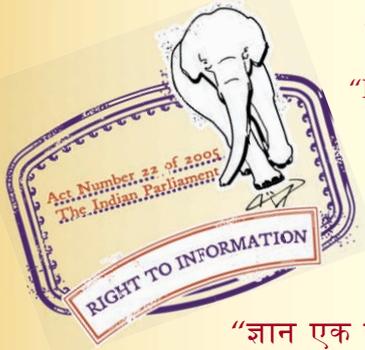
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 842 (1968): Smith's Swages [PGD 6: Earth, Metal And Wood Working Hand Tools]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”





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IS : 842 - 1968

*Indian Standard*  
SPECIFICATION FOR  
SMITH'S SWAGES  
( *First Revision* )

First Reprint FEBRUARY 1980  
( Incorporating Amendments No. 1 and 2 )

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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

May 1968

# Indian Standard

## SPECIFICATION FOR SMITH'S SWAGES ( First Revision )

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**IS : 842 - 1968**

( *Continued from page 1* )

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*Indian Standard*  
SPECIFICATION FOR  
SMITH'S SWAGES  
( *First Revision* )

0. FOREWORD

**0.1** This Indian Standard ( First Revision ) was adopted by the Indian Standards Institution on 20 March 1968, after the draft finalized by the Hand Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

**0.2** This standard was originally issued in 1956. The present revision of the standard has been taken up to express the requirements only in metric units, rationalized to the extent practicable.

**0.2.1** Advantage of this revision has been taken to reduce the number of sizes in case of bottom swages, small shank, single grooved and top swages from eight to seven. One more type of swages ( namely, top swages, wire clamp type ) has been included in the revised version of this standard.

**0.3** Swages are being manufactured in the country in many conventional sizes and shapes. Materials used also differ from manufacturer to manufacturer. This standard has, therefore, been prepared with a view to regulating the quality of indigenous products.

**0.4** This standard specifies five common types of swages and a number of sizes in each type which are commonly used. It is recommended that the purchasers should clearly specify in the enquiry and order their requirements by reference to type and size in the standard.

**0.5** This standard contains clauses which call for agreement between the purchaser and the supplier. The relevant clauses are 4.1.1, 11.1, 13.1 and 14.1.

**0.6** In preparation of this standard assistance has been derived from the following drawings, issued by Ministry of Defence, Government of India.

IND/GS/434 Swages, top

IND/GS/810 Swages, bottom  $1\frac{1}{2}$  in

IND/GS/811 Swages, bottom  $1\frac{1}{2}$  in

IND/GS/812 Swages, bottom  $\frac{3}{4}$  in

## **IS : 842 - 1968**

**0.7** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

### **1. SCOPE**

**1.1** This standard covers the general requirements for the following five types of smith's swages:

- a) Bottom swages, small shank, single grooved;
- b) Bottom swages, large shank, single grooved;
- c) Bottom swages, large shank, double grooved;
- d) Top swages; and
- e) Top swages, wire clamp type.

### **2. MATERIAL**

**2.1** The swages shall be manufactured from only those steels which fulfil the requirement of hardness and test as laid down in 3.1 and 15.1. One of the suitable steels for this purpose is T60 of Schedule VI of IS : 1570-1961† with phosphorus and sulphur contents limited to 0.05 percent each.

### **3. HARDNESS**

**3.1** The working faces of swages shall have a hardness of 450 to 550 *HV* ( see IS : 1501-1959‡ ) or its equivalent in other scales.

**3.1.1** For the determination of hardness, any recognized form of hardness tester may be used.

### **4. SHAPES AND DIMENSIONS**

**4.1** The shapes and dimensions of swages shall be as indicated in Tables 1 to 5.

**4.1.1** Swages with slightly different dimensions may be accepted subject to prior agreement between the purchaser and the supplier.

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\*Rules for rounding off numerical values ( revised ).

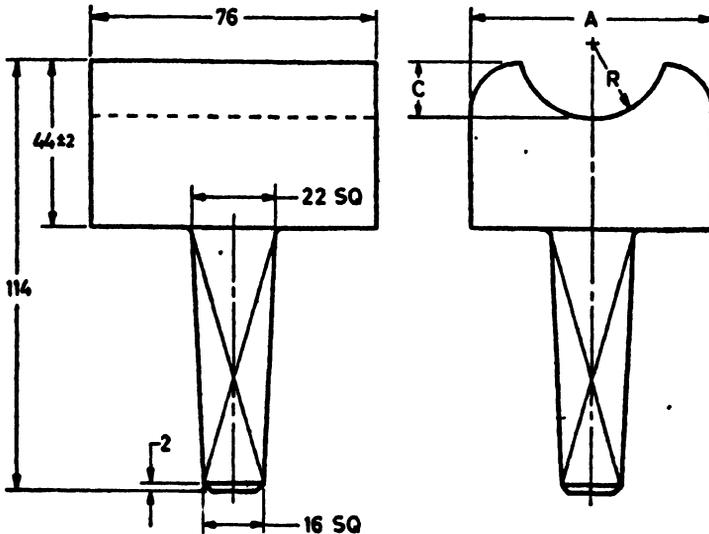
†Schedules for wrought steels for general engineering purposes.

‡Method for Vickers hardness test for steel.



**TABLE 1 DIMENSIONS FOR BOTTOM SWAGES, SMALL SHANK, SINGLE GROOVED***( Clause 4.1 )*

All dimensions in millimetres.

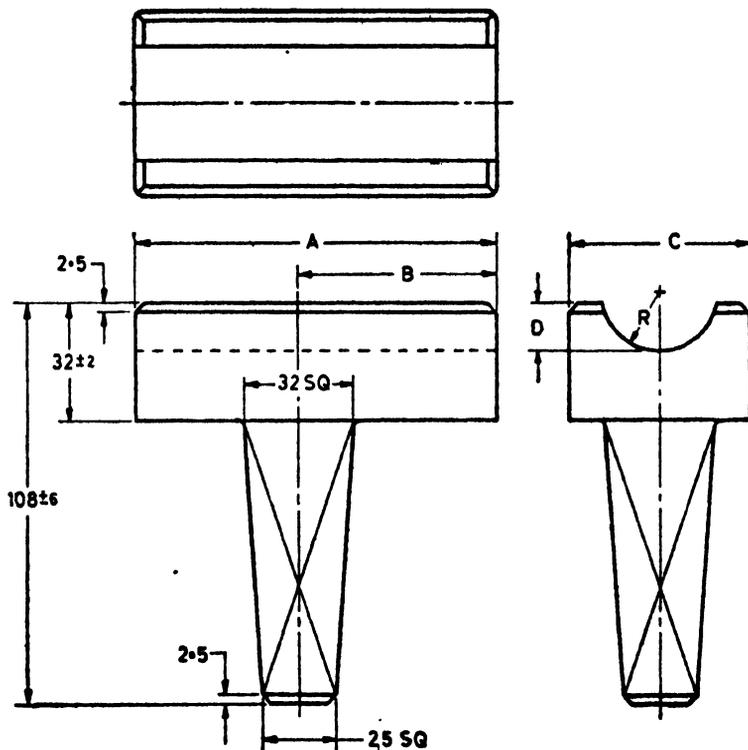


NOMINAL SIZE	A ± 2	C +0.4 -0	R +0.4 -0
10	50	4.0	5.0
12	50	5.0	6.0
16	50	6.0	8.0
20	50	8.0	10.0
25	60	9.5	12.5
32	65	13.0	16.0
40	70	15.0	20.0

**TABLE 2 DIMENSIONS FOR BOTTOM SWAGES, LARGE SHANK, SINGLE GROOVED**

( Clause 4.1 )

All dimensions in millimetres.

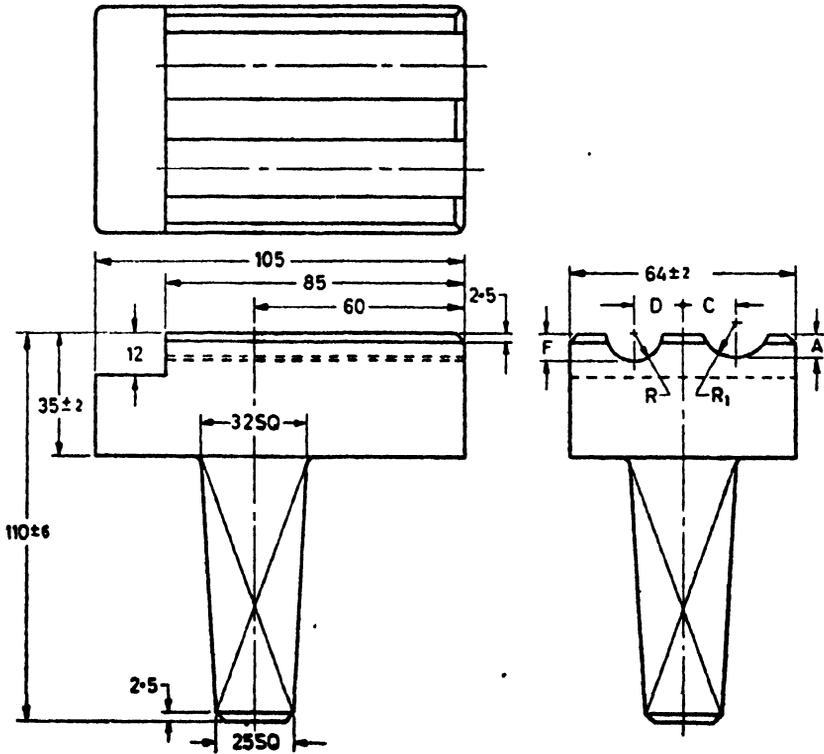


NOMINAL SIZE	A	B	C	D +2 -0	R +0.4 -0
20	95	55	50	9.0	10.0
25	95	55	50	10.0	12.5
32	100	55	50	13.0	16.0
40	115	70	55	15.0	20.0

**TABLE 3 DIMENSIONS FOR BOTTOM SWAGES, LARGE SHANK, DOUBLE GROOVED**

( Clause 4.1 )

All dimensions in millimetres.

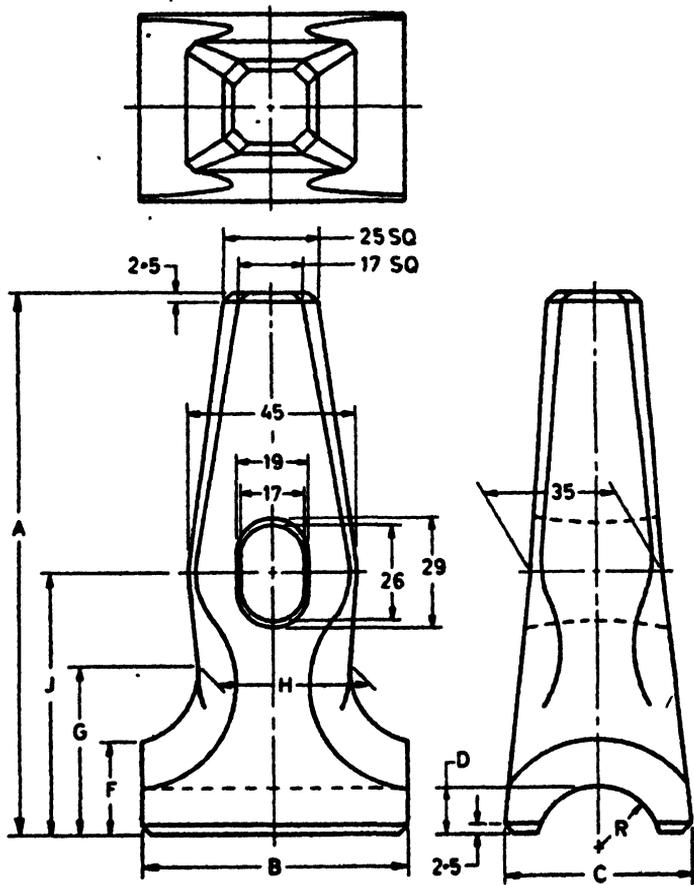


NOMINAL SIZE	A +0.4 -0	C	D	F +0.4 -0	R +0.4 -0	R <sub>1</sub> +0.4 -0
10,12	2.5	10	8	4.5	5.0	6.0
16,20	6.5	15	14	7.5	8.0	10.0

**TABLE 4 DIMENSIONS FOR TOP SWAGES**

( Clause 4.1 )

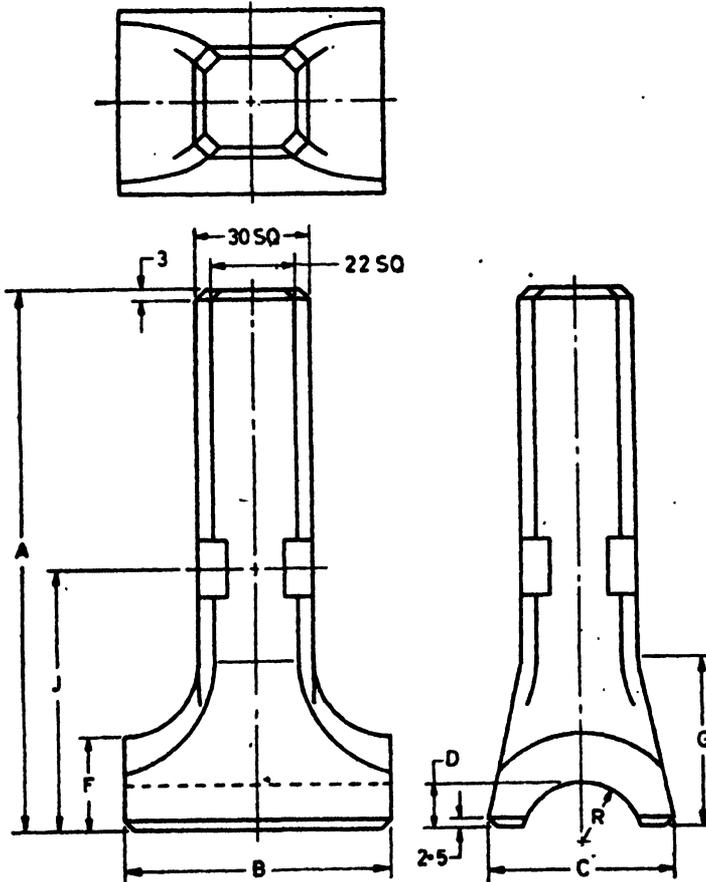
All dimensions in millimetres.



NOMINAL SIZE	A ±6	B	C ±2	D +0.4 -0	F	G	H	J	R +0.4 -0
10	135	60	20	5.0	10	20	35	65	5.0
12	140	60	25	5.0	15	30	35	65	6.0
16	140	60	30	6.0	15	30	35	65	8.0
20	140	60	30	8.0	15	30	35	70	10.0
25	140	70	35	10.0	20	35	40	70	12.5
32	145	70	50	12.0	25	45	40	70	16.0
40	150	70	50	15.0	30	45	40	75	20.0

**TABLE 5 DIMENSIONS FOR TOP SWAGES, WIRE CLAMP TYPE**  
( Clause 4.1 )

All dimensions in millimetres.



NOMINAL SIZE	A ±6	B	C ±2	D +0.4 -0	F	G	J	R +0.4 -0
10	135	60	20	5.0	10	20	65	5.0
12	140	60	25	5.0	15	30	65	6.0
16	140	60	30	6.0	15	30	65	8.0
20	140	60	30	8.0	15	30	70	10.0
25	140	70	35	10.0	20	35	70	12.5
32	145	70	50	12.0	25	45	70	16.0
40	150	70	50	15.0	30	45	75	20.0

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## **5. TOLERANCES**

**5.1** Permissible tolerances on dimensions shall be as given in the relevant tables. Tolerances on other dimensions shall be in accordance with IS : 3469-1966\* and shall not, in any case, exceed  $\pm 1$  mm.

## **6. HANDLES**

**6.1** When the handles are required to be supplied with smith's top swages, they shall conform to the requirements of those of Class 3 of IS : 620-1965†. They shall be shaped, before fitting, to suit the eyes of top swages.

## **7. MANUFACTURE**

**7.1** Swages shall be soundly forged to the shape in one-piece. The grooves shall be accurately made.

**7.2** The eyes in the top swages shall be central and oval and shall be drifted from both sides to leave a central waist.

**7.3** The shank of bottom swages shall be accurately formed and shall taper towards the end.

## **8. WORKMANSHIP AND FINISH**

**8.1** Swages shall be free from cracks, seams, pits, scales, flaws, burrs and other defects. The eye for the handle in the case of top swages shall be free from sharp edges. The grooves shall be even throughout.

**8.2** Swages shall be finished smooth all over. Working faces shall be well and evenly hardened, tempered and polished bright.

## **9. SUPPLY OF SMITH'S SWAGES**

**9.1** General requirements relating to the supply of smith's swages shall conform to IS : 1387-1967‡.

## **10. DESIGNATION**

**10.1** The smith's swages shall be designated by:

- a) Commonly used name,
- b) Nominal size, and
- c) Number of this standard.

---

\*Tolerances for steel drop forgings, upset forgings, press forgings and forged bars.

†General requirements for wooden tool handles (*second revision*).

‡General requirements for the supply of metallurgical materials (*first revision*).

*Example:*

A smith's top swage of 10 mm nominal size shall be designated as:

Top Swage 10 IS : 842

## 11. PRESERVATIVE TREATMENT

11.1 Swages shall be coated with suitable anti-corrosive paint when required by the purchaser.

## 12. MARKING

12.1 Swages shall be clearly and legibly stamped with the manufacturer's name or initials or recognised trade mark or both, type and size. When required by the purchaser, the year of manufacture shall also be stamped.

12.1.1 Swages may also be marked with the ISI Certification Mark.

*Note* — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## 13. PACKING

13.1 Swages shall be securely packed in suitable packing cases of a size convenient for handling in transit or bundled and secured suitably with the wire, or as may be specified by the purchaser. Each type and size of swages shall be kept separate when packed.

## 14. SAMPLING

14.1 Unless otherwise agreed to between the supplier and the purchaser, the sampling plan as given in Appendix A shall be followed.

## 15. TEST

15.1 The swage shall be held vertical with its working face downward on a bar having its diameter equal to the size of the swage placed on an anvil. Five full blows shall be struck on the shank with 1 kg sledge hammer in case of 10, 12, 16 and 20 mm nominal size swages and with a 2.5 kg sledge hammer for the remaining sizes. The swages shall not show any sign of damage or distortion after the test.

**APPENDIX A**

( Clause 14.1 )

**SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY**

**A-1. SCALE OF SAMPLING**

**A-1.1 Lot** — In any consignment all the smith's swages of the same type and size manufactured under essentially similar conditions of manufacture shall constitute a lot.

**A-1.2** For ascertaining the conformity of the lot to the requirements of this specification, tests shall be carried out for each lot separately. The number of smith's swages to be selected at random for this purpose shall be in accordance with col 1 and 2 of Table 6.

**TABLE 6 SAMPLE SIZE AND CRITERIA FOR CONFORMITY**

( Clauses A-1.2, A-1.3, A-2.1.1 and A-2.2 )

LOT SIZE <i>N</i>	FOR HARDNESS, SHAPES AND DIMENSIONS, TOLERANCES, AND WORKMANSHIP AND FINISH		FOR TEST, SUB-SAMPLE SIZE
	Sample Size <i>n</i>	Permissible No. of Defectives	
(1)	(2)	(3)	(4)
Up to 25	3	0	2
26 „ 50	5	0	2
51 „ 100	8	0	3
101 „ 150	13	1	4
151 „ 300	20	1	5
301 and above	32	2	8

**A-1.3** The swages shall be selected at random and to ensure the randomness of selection random number tables shall be used. If the tables are not available the following procedure is recommended for use:

Starting from any swage in a lot, count them in one order as 1, 2, 3,....., up to *r* and so on where *r* is the integral part of  $N/n$  (*N* being the lot size and *n* the sample size indicated in col 2 of Table 6). Every *r*th smith's swage thus counted shall be selected to constitute the sample.



## **A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY**

**A-2.1** The smith's swages selected according to **A-1.3** shall be examined for hardness (*see 3*), shapes and dimensions (*see 4*), tolerances (*see 5*), workmanship and finish (*see 8*). Any swage failing to meet the requirements of any one or more of the characteristics shall be considered defective.

**A-2.1.1** If the number of defective swages in a sample is less than or equal to the corresponding permissible number of defectives given in col 3 of Table 6, the lot shall be declared conforming to the characteristics mentioned in **A-2.1**.

**A-2.2** From the lots found satisfactory in accordance with **A-2.1.1**, a sub-sample of the size indicated in col 4 of Table 6 shall be selected and subjected to test (*see 15*).

**A-2.2.1** If all the swages subjected to test satisfy the necessary requirements, the lot shall be declared conforming to the requirements of this standard.

# INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

## Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	2 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>

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